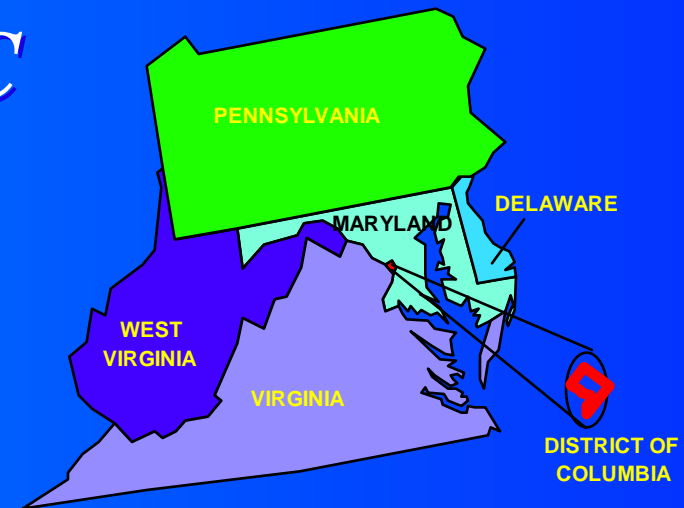


Efforts to Reduce Lead by the Industrial Community: *A Regional Perspective*

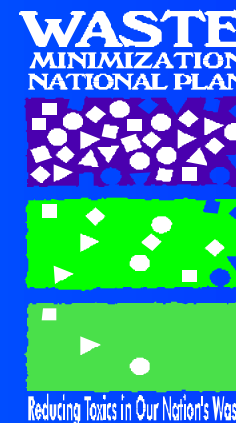
RCRA National Meeting
January 16, 2002
Washington, DC

Noah Borenstein
Waste Minimization Team
Waste & Chemicals Management Division
Region III



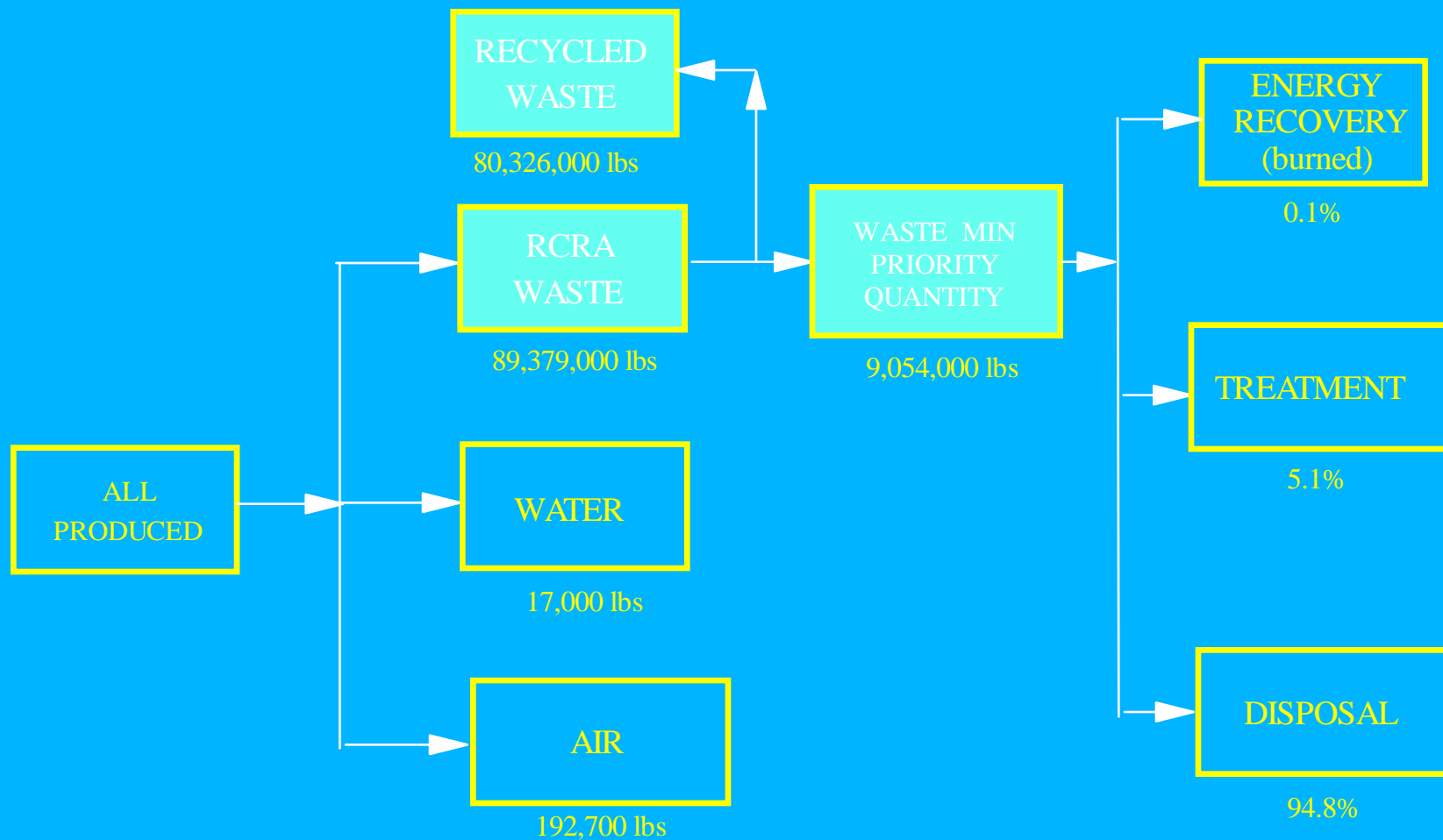
Outline

- ▶ Region 3 Landscape
- ▶ Regional Waste Minimization Program
- ▶ Waste Minimization Success Stories:
 - ▶ Sylvin Technologies: PVC compounder
 - ▶ Signode Eastern Operations: steel strapping
 - ▶ Corning Asahi: glass for TV and computer monitors
 - ▶ American Video Glass: glass for CRTs



Lead & Lead Compounds - Region 3 States

(Basis: TRI 1998)



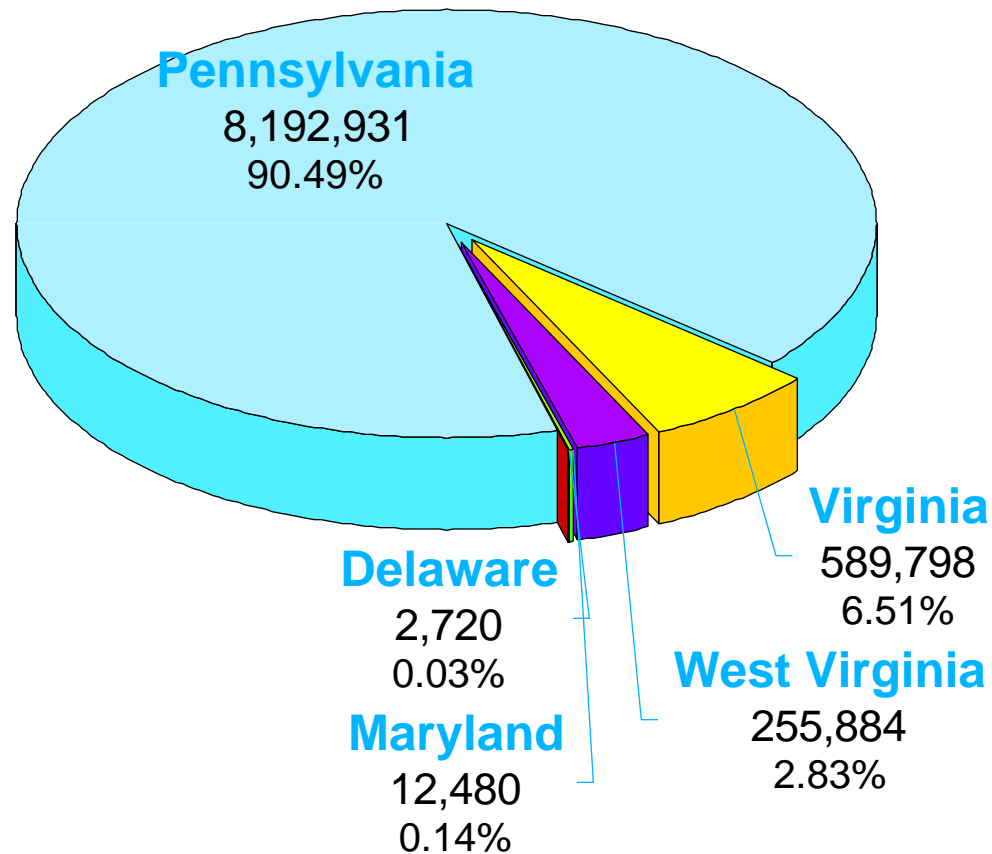
NOTE: The "Waste Minimization Priority Quantity" is the quantity being measured to meet GPRA goals (50% reductions by 2005)

Lead and Lead Compounds - Region 3 States

Waste Min Priority Quantities

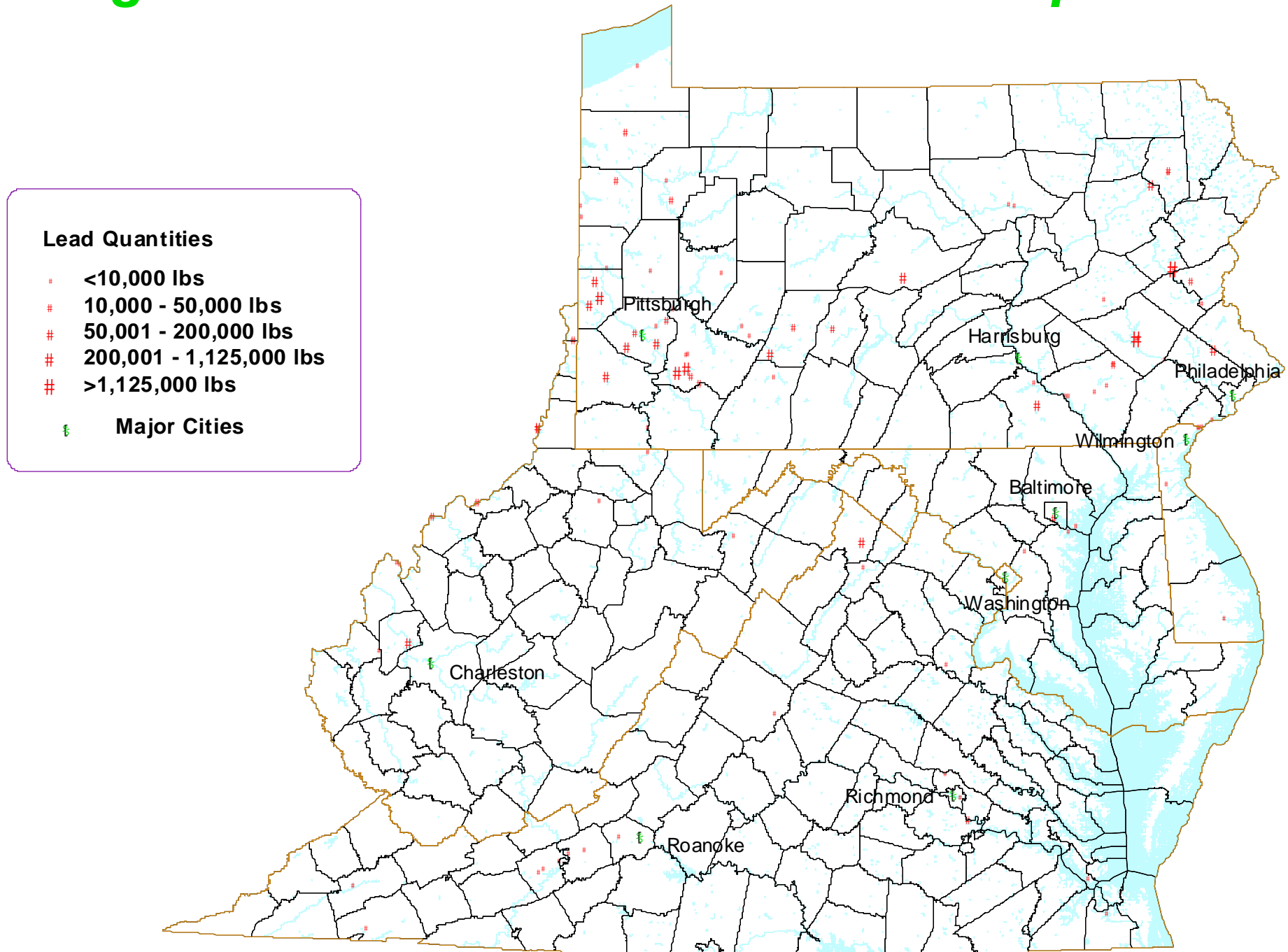
(pounds)

Total: 9,053,813



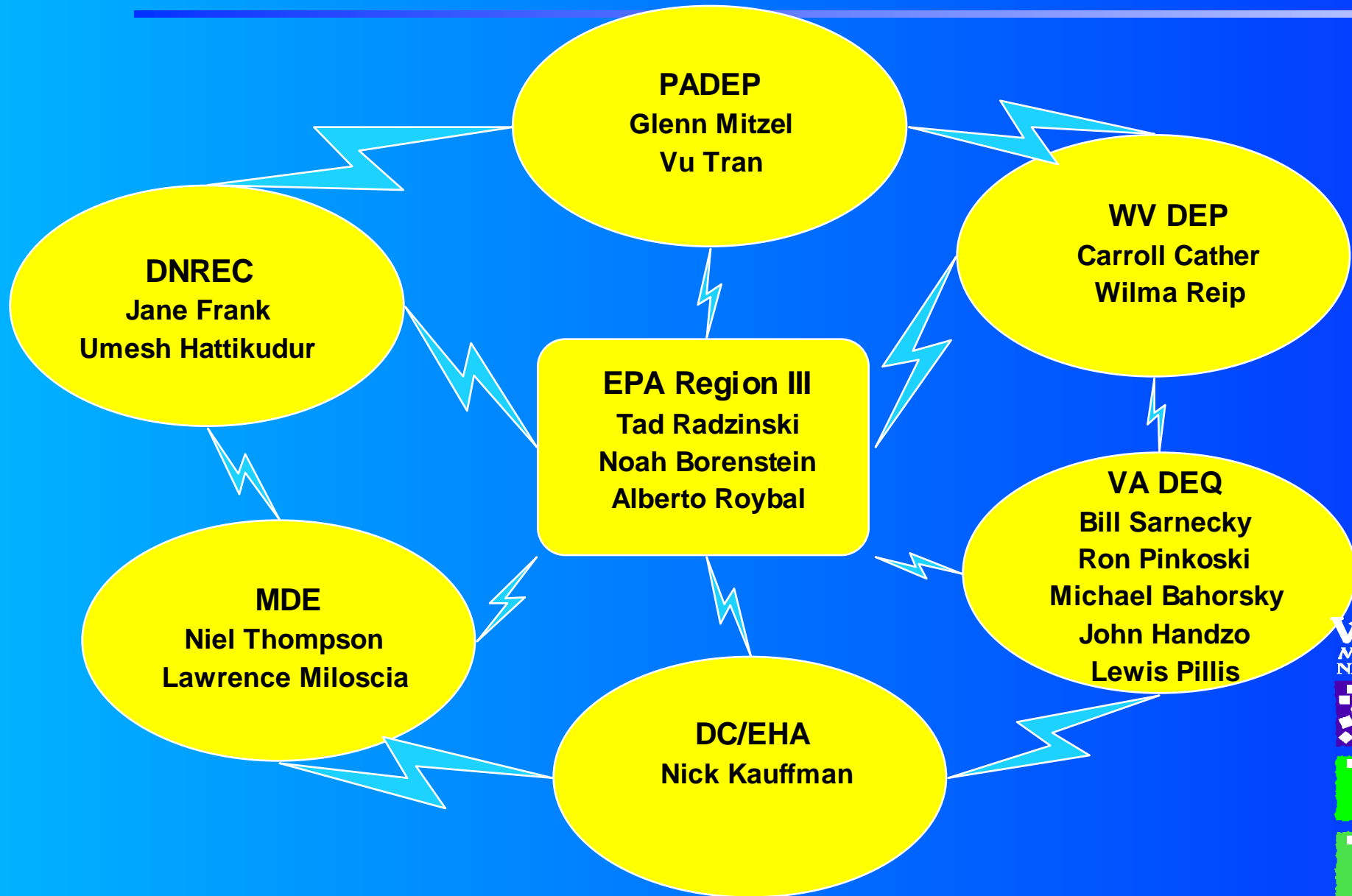
Basis: 1998 Toxics Release Inventory

Region 3 Facilities - Lead & Lead Compounds



Region III

Waste Minimization Implementation Team



Waste Minimization Team Support Services

- ▶ Waste Minimization Site Visits
- ▶ Site Visit Report
- ▶ Source Reduction Strategy Development
- ▶ Technical Information / Resources
- ▶ Education / workshops
- ▶ Recognition

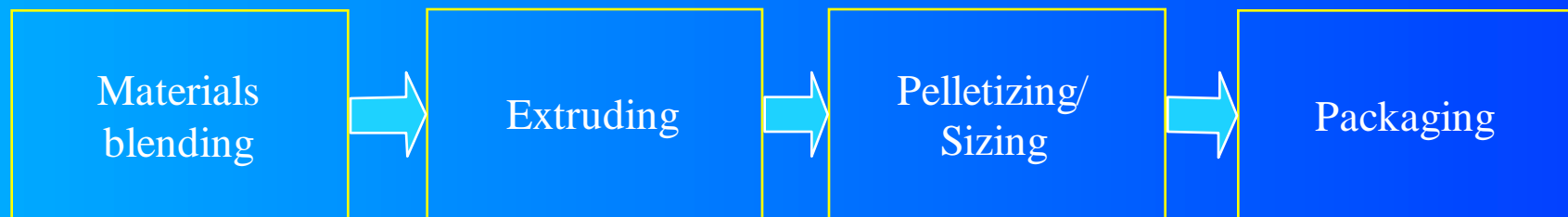


Sylvin Technologies, Inc.

Denver, PA (SIC 3087)

- ★ Manufacturer of flexible to semi-rigid PVC and PVC alloy compounds

► Overall Process:



► Lead-related Process:

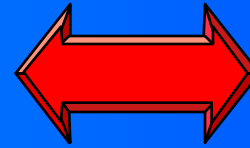
- Lead (and cadmium) compounds are used as heat stabilizers in PVC processing



Sylvin Technologies, Inc. (cont.)

► Pollution Prevention/Waste Minimization Initiatives:

Material substitution:



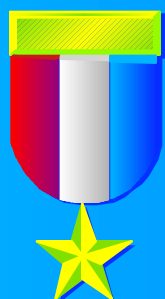
to reduce the use of lead (and cadmium) compounds from the manufacture of wire and cable, and electrical molding products.

- In 1996, completely **eliminated** the use of **cadmium**
- All new customers: only offered **non-leaded** stabilized compounds
- Current customer base: converting to non-leaded products; only supply lead-stabilized if customers demand it

Sylvin Technologies, Inc. (cont.)

► Data (TRI):

Lead Compounds (lbs.)	1994	1999	Percent change
RCRA Waste	15,228	6,153	- 59.6
Off site recycled	11,450	6,073	- 47.0
On site Treatment/ off site Disposal	2,389	80	- 96.7



► Accomplishments:

- ✓ Production more than doubled (1994-1999)
- ✓ Lead-stabilized products dropped from 75% to 68%
- ✓ Goal = 10% by 2005
- ✓ By 1996, eliminated cadmium-stabilized products

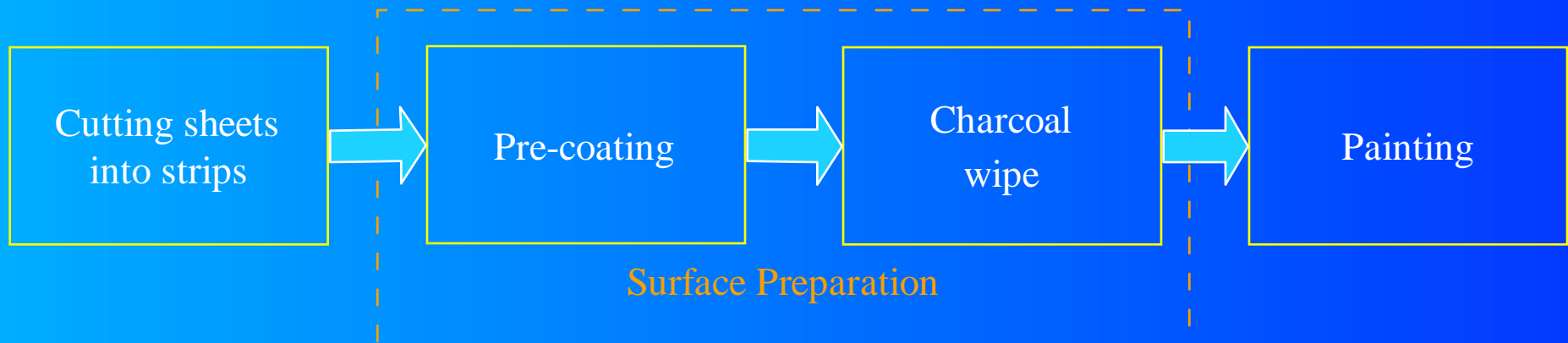


Signode Eastern Operations

Baltimore, MD (SIC 3499)

- ★ Manufacturer of low-carbon and high carbon steel, and plastic strapping systems used in industrial packaging

► Overall process



► Lead-related Process: Surface preparation

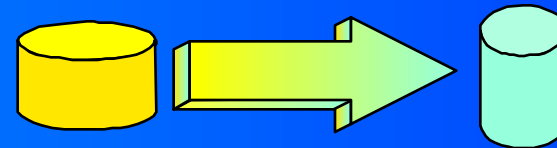
- steel straps are passed through a molten lead bath
- excess lead is wiped off by charcoal bed.



Signode Eastern Operations (cont.)

- ▶ Facility generates an average of 142,000 lbs of lead:
 - ▶ lead-containing charcoal waste (shipped off site for disposal)
 - ▶ lead dross produced in molten bath (shipped off site to recycler)
- ▶ **Waste Minimization Initiatives:**

- ▶ Process modification



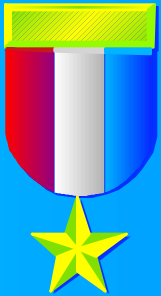
low-carbon steel straps (1/2001)

- ▶ eliminated molten lead bath and charcoal wipe
- ▶ replaced it with iron phosphate pretreatment
- ▶ reduced number of gas-fired burners from 11 to 1
- ▶ eliminated scrubber system

Signode Eastern Operations (cont.)

- ▶ Process modification challenge:
customer acceptance that product quality is not affected

- ▶ Accomplishments:



- ✓ Eliminated 100,000 lbs. of lead from molten bath
- ✓ Eliminated 24,000 lbs. of lead per year (17% reduction).
- ✓ Saved over \$40,000 annually in energy savings
- ✓ This is one of three sister plants already converted.

TOTAL = 300,000 lbs. of molten lead
72,000 lbs. per year of lead
\$120,000 per year in energy

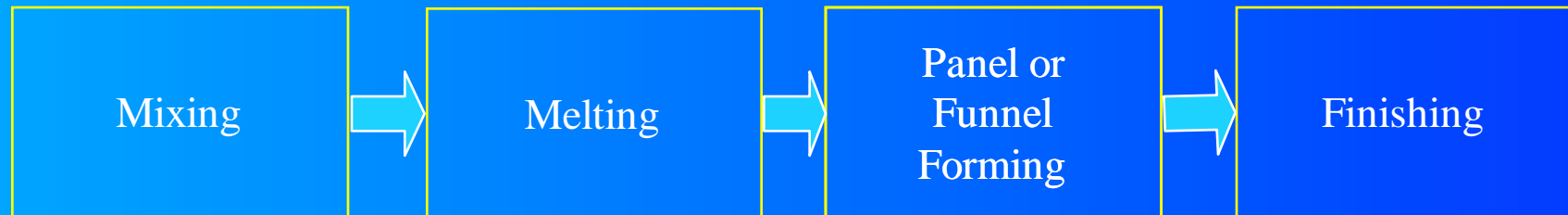


Corning Asahi Video Products Co.

State College, PA (SIC 3229)

- ★ Manufacturer of tube components for television and computer monitors, including face plates (panels), funnels, necks and neck tubing.

► *Overall Process:*



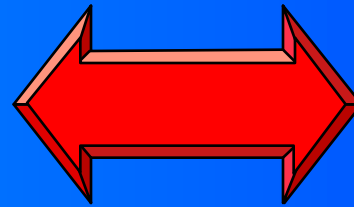
► *Lead-related Process:*

- Lead compounds are incorporated into the glass recipe of both panel and funnel components.
- Lead provides shielding from high energy radiation emanating from the completed cathode ray tube (CRT)

Corning Asahi Video Products Co. (cont.)

► Waste Minimization Initiatives:

► Material substitution:

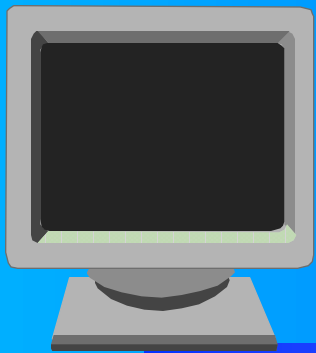


replaced lead oxide with zirconium oxide in the panel glass recipe (1998/1999)

► Recycling:



high lead-containing **electrostatic precipitator (EP)**
dust and funnel edge grind back to mixing/melting
operations

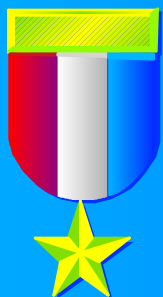


Corning Asahi Video Products Co. (cont.)

► Data (TRI):

Lead Compounds (lbs.)	1991	2000
Air releases	9,465	4,306
Water releases	240	169
On site recycled	840,000	23,443,000
Off site disposal	740,835	379,069

► Accomplishments:



- ✓ Production almost doubled (1991-2000)
- ✓ Air releases decreased by 55%
- ✓ Water releases decreased by 30%
- ✓ Off site disposal decreased by 49%

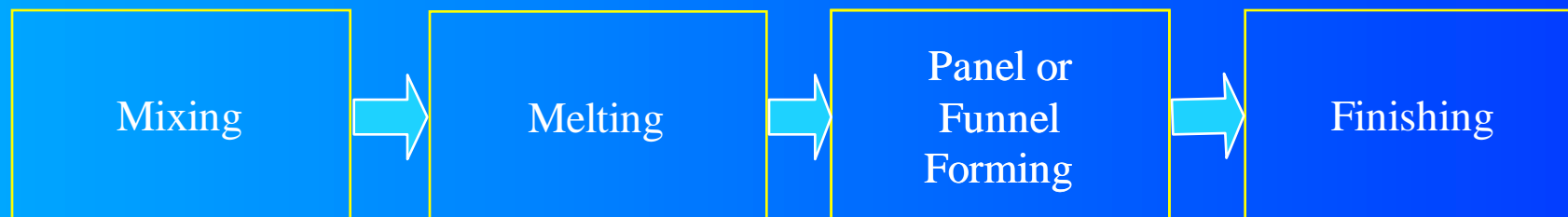


American Video Glass

Mt. Pleasant, PA (SIC 3229)

- ★ Manufacturer of glass panels and funnels; (components of TV picture tubes) - [JV: Corning Asahi Video Products Co. and Sony Electronics (1997)]

► Overall Process:



► Lead-related Process:

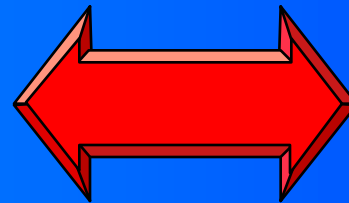
- Lead compounds are incorporated into the glass recipe of both panel and funnel components.
- Lead provides shielding from high energy radiation emanating from the completed cathode ray tube (CRT)



American Video Glass (cont.)

► Waste Minimization Initiatives:

► Material substitution:



replaced lead oxide with zirconium oxide in the panel glass recipe

► Recycling:



- ✓ electrostatic precipitator (EP) dust (2/99)
- ✓ post-consumer recycling center (de-manufacturing)



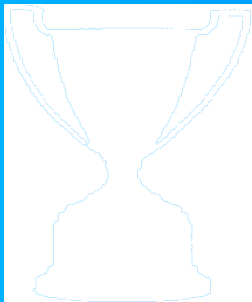
American Video Glass (cont.)

► Data (TRI):

Lead Compounds (lbs.)	1997	1998	1999
Recycled (On site/off site)	0	147,720	382,904
Disposal (off site)	579,985	324,115	33,800

► Accomplishments:

- ✓ While production increased by ~20% (1997-2000), disposal decreased by >95%.
- ✓ Since 3/99, **savings** in raw materials and from waste disposal amounted to more than **\$560,000**.
- ✓ Currently, practically all of the lead waste is recycled.
- ✓ PBT Cup award winner in 1999



Summary

- ▶ Lead & lead compounds have been identified as important priorities of the Waste Minimization Program.
- ▶ Progressive companies have embarked on very successful waste minimization efforts utilizing: **material substitution, process modifications, and recycling** techniques.
- ▶ These efforts have achieved **significant reductions** of these compounds in the wastes and **have reduced the operating costs** of these companies.

WASTE = LOST PROFITS !